

Mr. Edward H. Carroll  
Calumet Wilbert Vault Company, Inc.  
1920 West 41<sup>st</sup> Avenue  
Gary, IN 46408

Dear Mr. Carroll:

Re: Exempt Construction and Operation Status,  
089-14818-00104

The application from Calumet Wilbert Vault Company, Inc., received on August 31, 2001, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-1.1-3, it has been determined that the following emission unit, to be located at 1920 West 41<sup>st</sup> Avenue, Gary, Indiana, is classified as exempt from air pollution permit requirements:

- (a) A crematory incinerator for human remains and containers, with a maximum capacity of one hundred (100) pounds an hour, supplemented by natural gas at a rate of 1.7 million BTU/hr.

The following conditions shall be applicable:

- (1) Pursuant to 326 IAC 5-1-2 (Opacity Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following:
  - (a) Opacity shall not exceed an average of twenty percent (20%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
  - (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor in a six (6) hour period.
- (2) Pursuant to 326 IAC 4-2-2, the crematory incinerator shall:
  - (1) consist of primary and secondary chambers or the equivalent;
  - (2) be equipped with a primary burner unless burning wood products;
  - (3) comply with 326 IAC 5-1 and 326 IAC 2;
  - (4) be maintained properly as specified by the manufacturer and approved by the commissioner;
  - (5) be operated according to the manufacturer's recommendations and only burn waste approved by the commissioner.
  - (6) comply with other state and/or local rules or ordinances regarding installation and operation of incinerators.

- (7) be operated so that emissions of hazardous material including, but not limited to, viable pathogenic bacteria, dangerous chemicals or gases, or noxious odors are prevented;
- (8) not emit particulate matter in excess of five-tenths (0.5) pounds of particulate matter per one thousand (1000) pound of dry exhaust gas at standard conditions corrected to fifty percent (50%) excess air;
- (9) not create a nuisance or a fire hazard.

The operation of this incinerator shall be terminated immediately upon noncompliance with any of the above mentioned requirements.

This exemption is the first air approval issued to this source.

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Quality (OAQ) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

Sincerely,

Paul Dubenetzky, Chief  
Permits Branch  
Office of Air Quality

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cc: File - Lake County  
Lake County Health Department  
Air Compliance - Ramesh Tejuja  
Northwest Regional Office  
Permit Tracking - Janet Mobley  
Technical Support and Modeling - Michele Boner  
Compliance Data Section - Karen Nowak

# Indiana Department of Environmental Management Office of Air Quality

## Technical Support Document (TSD) for an Exemption

### Source Background and Description

**Source Name:** Calumet Wilbert Vault Company, Inc.  
**Source Location:** 1920 West 41<sup>st</sup> Avenue, Gary, IN 46408  
**County:** Lake  
**SIC Code:** 7261  
**Operation Permit No.:** 089-14818-00104  
**Permit Reviewer:** Madhurima D. Moulik

The Office of Air Quality (OAQ) has reviewed an application from Calumet Wilbert Vault Company, Inc. relating to the construction and operation of a crematory incinerator.

### Emission Units and Pollution Control Equipment

The source consists of the following permitted emission units and pollution control devices:

- (a) A crematory incinerator for human remains and containers, with a maximum capacity of one hundred (100) pounds an hour, supplemented by natural gas at a rate of 1.7 million BTU/hr.

### Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
# 1	Incinerator	17	1.7	2200	1000

### Enforcement Issue

There are no enforcement actions pending.

### Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

A complete application for the purposes of this review was received on August 31, 2001.

### Emission Calculations

See Appendix A of this document for detailed emissions calculations.

## Potential To Emit

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source or emissions unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA, the department, or the appropriate local air pollution control agency.”

Pollutant	Potential To Emit (tons/year)
PM	0.45
PM-10	0.45
SO <sub>2</sub>	0.55
VOC	Negligible
CO	0.63
NO <sub>x</sub>	0.31

- (a) The potential to emit (as defined in 326 IAC 2-7-1 (29)) of PM, PM<sub>10</sub> is less than five (5) tons, and less than ten (10) tons per year of other criteria pollutants, as well as less than twenty-five (25) tons per year of CO. Therefore, the source is not subject to the provisions of 326 IAC 2-5 and will be granted an exemption.

## County Attainment Status

The source is located in Lake County.

Pollutant	Status*
PM-10	moderate non-attainment
SO <sub>2</sub>	non-attainment(for portions)
NO <sub>2</sub>	attainment
Ozone	severe non-attainment
CO	maintenance attainment
Lead	attainment

\* Lowell, Indiana, is located in the portion of the county which is attainment for SO<sub>2</sub> and unclassifiable for PM-10.

- (a) Volatile organic compounds (VOC) and oxides of nitrogen (NO<sub>x</sub>) are precursors for the formation of ozone. Therefore, VOC and NO<sub>x</sub> emissions are considered when evaluating the rule applicability relating to the ozone standards. Lake County has been designated as severe non-attainment for ozone.
- (b) Lake County has been classified as maintenance attainment for CO. Therefore, the CO emission was reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

## Federal Rule Applicability

- (a) The incinerator has a charge rate of less than fifty (50) tons per day. Therefore, it is not subject to the requirements of the New Source Performance Standard, 326 IAC 12, (40 CFR 60.50, Subpart E).
- (b) The crematory incinerator does not combust any hazardous waste as defined in 40 CFR

261. Therefore, the incinerator is not subject to the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAPs)(40 CFR 63, Subpart EEE).

### **State Rule Applicability - Entire Source**

#### **326 IAC 2-6 (Emission Reporting)**

This source is not subject to 326 IAC 2-6 (Emission Reporting), because it has the potential to emit less than ten (10) tons per year.

#### **326 IAC 5-1 (Opacity Limitations)**

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of twenty percent (20%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

### **State Rule Applicability - Individual Facilities**

#### **326 IAC 4-2-2 (Incinerators: requirements)**

Pursuant to 326 IAC 4-2-2, the crematory incinerator shall:

- (1) consist of primary and secondary chambers or the equivalent;
- (2) be equipped with a primary burner unless burning wood products;
- (3) comply with 326 IAC 5-1 and 326 IAC 2;
- (4) be maintained properly as specified by the manufacturer and approved by the commissioner;
- (5) be operated according to the manufacturer's recommendations and only burn waste approved by the commissioner.
- (6) comply with other state and/or local rules or ordinances regarding installation and operation of incinerators.
- (7) be operated so that emissions of hazardous material including, but not limited to, viable pathogenic bacteria, dangerous chemicals or gases, or noxious odors are prevented;
- (8) not emit particulate matter in excess of five-tenths (0.5) pounds of particulate matter per one thousand (1000) pound of dry exhaust gas at standard conditions corrected to fifty percent (50%) excess air;
- (9) not create a nuisance or a fire hazard.

#### **326 IAC 6-3-2 (Process Operations)**

Incinerators are exempt from 326 IAC 6-3-2. Therefore, this rule does not apply.

### **Conclusion**

The construction and operation of this crematory incinerator shall be subject to the conditions of the attached proposed Exemption 089-14818-00104.

**Appendix A: Emissions Calculations****Natural Gas Combustion Only****MM BTU/HR <100****Small Industrial Boiler****Company Name: Calumet Wilbert Vault Company, Inc.****Address City IN Zip: 1920 West 41st Ave., Gary, IN 46408****CP: 089-14818****Pit ID: 089-00104****Reviewer: Madhurima D. Moulik****Date: Sep 17, 2001.**Heat Input Capacity  
MMBtu/hrPotential Throughput  
MMCF/yr

1.7

14.9

Pollutant						
Emission Factor in lb/MMCF	PM* 7.6	PM10* 7.6	SO2 0.6	NOx 100.0 **see below	VOC 5.5	CO 84.0
Potential Emission in tons/yr	0.1	0.1	0.0	0.7	0.0	0.6

\*PM emission factor is filterable PM only. PM10 emission factor is condensable and filterable PM10 combined.

\*\*Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

**Methodology**

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

See page 2 for HAPs emissions calculations.

**Appendix A: Emissions Calculations****Natural Gas Combustion Only****MM BTU/HR <100****Small Industrial Boiler****HAPs Emissions****Company Name: Calumet Wilbert Vault Company, Inc.****Address City IN Zip: 1920 West 41st Ave., Gary, IN 46408****CP: 089-14818****Plt ID: 089-00104****Reviewer: Madhurima D. Moulik****Date: Sep 17, 2001.****HAPs - Organics**

Emission Factor in lb/MMcf	Benzene 2.1E-03	Dichlorobenzene 1.2E-03	Formaldehyde 7.5E-02	Hexane 1.8E+00	Toluene 3.4E-03
Potential Emission in tons/yr	1.564E-05	8.935E-06	5.585E-04	1.340E-02	2.532E-05

**HAPs - Metals**

Emission Factor in lb/MMcf	Lead 5.0E-04	Cadmium 1.1E-03	Chromium 1.4E-03	Manganese 3.8E-04	Nickel 2.1E-03
Potential Emission in tons/yr	3.723E-06	8.191E-06	1.042E-05	2.829E-06	1.564E-05

Methodology is the same as page 1.

The five highest organic and metal HAPs emission factors are provided above.

**Appendix A: Emission Calculations**  
**Crematory Incinerator**  
**Company Name: Calumet Wilburt Vault Company**  
**Address: 1920 West 41<sup>st</sup> Ave., Gary, IN 46408**  
**CP: 089-14818**  
**Plt. ID: 089-00104**  
**Reviewer: Madhurima D. Moulik**  
**Date: September 25, 2001**

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Southern Environmental Sciences, Inc. conducted emissions testing on the Industrial Equipment & Engineering Company's Power-Pak II, Model IE43-PPII crematory incinerator on May 18, 1994. The unit was located at 13011 U. S. Highway 19, Hudson, Florida. The testing was conducted for particulates, carbon monoxide (CO), and visible emissions. Oxygen (O<sub>2</sub>) concentrations were measured in order to correct results to 7% O<sub>2</sub>.

Emission factors for Nitrogen Oxides (NO<sub>x</sub>) are based on a test on a larger unit of similar design (Ener-Tek cremator).

Nitrogen Oxides (NO<sub>x</sub>)

Emission rate for Ener-Tek model (test results) = 0.136 lbs/hr

Capacity of Ener-Tek = 250 lb/hr

Capacity of Power-Pak II = 100 lb/hr

Therefore, emission rate for Power Pak II = 0.136 lb/hr x (100 lb/hr)/(250 lb/hr)

= 0.054 lb/hr = 0.054 lb/hr x 8760 hr/yr x 1 ton/2000 lb = 0.24 tons/yr

Volatile Organic Compounds (VOC)

Emission rate for Ener-Tek model (test results) = 0.001 lb/hr.

Therefore, emission rate for Power Pak II = 0.001 lb/hr x (100 lb/hr)/(250 lb/hr)

= 0.0004 lb/hr = 0.0004 lb/hr x 8760 hr/yr x 1 ton/2000 lb = 0.002 tons/yr

#### Sulfur Dioxide (SO<sub>2</sub>)

Emission factor from AP-42, Table 2.1-12 (2.5 lb/ton burned) used because of lack of test data.

$$\text{SO}_2 \text{ emissions} = 100 \text{ lb/hr} \times 2.5 \text{ lb SO}_2/\text{ton} \times 1 \text{ ton}/2000 \text{ lb}$$

$$= 0.125 \text{ lb/hr}$$

$$= 0.125 \text{ lb/hr} \times 8760 \text{ hr/yr} \times 1 \text{ ton}/2000 \text{ lb}$$

$$= 0.55 \text{ tons/yr.}$$

#### Carbon Monoxide (CO)

Emission factors taken from tests conducted on Power Pak II crematory.

$$\text{CO emissions} = 0.007 \text{ lb/hr}$$

$$= 0.007 \text{ lb/hr} \times 8760 \text{ hr/yr} \times 1 \text{ ton}/2000 \text{ lb}$$

$$= 0.031 \text{ tons/yr.}$$

#### Particulate Matter (PM)

Emission factors taken from tests conducted on Power Pak II crematory.

$$\text{PM emissions} = 0.021 \text{ gr/dscf @ } 7\% \text{ O}_2$$

$$= 0.083 \text{ lb/hr}$$

$$= 0.083 \text{ lb/hr} \times 8760 \text{ hr/yr} / 2000 \text{ lb/ton}$$

$$= 0.364 \text{ tons/yr.}$$

#### Hazardous Air Pollutants (HAPs)

There are no known HAP emissions from this incinerator

**Appendix A: Emission Calculations**

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**Total Emissions**

**Company Name: Calumet Wilburt Vault Company**

**Address: 1920 West 41<sup>st</sup> Ave., Gary, IN 46408**

**CP: 089-14818**

**Plt. ID: 089-00104**

**Reviewer: Madhurima D. Moulik**

**Date: September 26, 2001**

Emissions in Tons per Year

Equipment	PM	PM-10	SO <sub>2</sub>	NO <sub>x</sub>	VOC	CO
Furnace	0.1	0.1	Negligible	0.7	Negligible	0.6
Incinerator	0.35	0.35	0.55	0.24	0.002	0.03
Total(tons/yr)	0.45	0.45	0.55	0.31	0.002	0.63